permitted me to study comparative material from different localities: W. B. Davis (TCWC), K. F. Koopman (AMNH), A. Musso (MHNLS), R. A. Lancini (MCNC), and C. O. Handley, Jr., (USNM). In addition, I wish to thank Osvaldo Reig, Andrew Starrett, Luis de la Torre, Edgardo Garcia, and Donald R. Patten, who read the manuscript and contributed useful suggestions. Juan A. Tronchoni, president of the Venezuelan Society of Speleology, who has been a companion on many expeditions in the country, permitted me to incorporate the material from that institution into the Biology Museum, Central University of Venezuela, and I take pleasure in naming this new bat in his honor.

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A NEW SPECIES OF *IPHITIME* (POLYCHAETA) FROM *CANCER ANTENNARIUS* (CRUSTACEA: DECAPODA)

JOHN PILGER[1]

ABSTRACT: A new species of *Iphitime* is described from *Cancer antennarius*. Notes are given on the morphological criteria used in separation of the five species of the genus.

During fixation of a specimen of *Cancer antennarius* (Stimpson, 1856) at the Santa Catalina Marine Biological Laboratory, 2 specimens of a new species of *Iphitime* crawled out between the third maxillipeds of the host. These 2 specimens belong to a new species which is described below with notes on frequency of infection and some morphological features of the family.

Iphitimidae Fauchald, 1970

The genus *Iphitime* was originally referred to the family Lysaretidae (Marenzeller, 1902) but was recently raised to familial status by Fauchald (1970). This separation was made because members of this genus possess branchiae, composite setae, two antennae, three paired maxillae, maximally, and they lack an unpaired maxillary carrier. The lysaretids, on the other hand, lack branchiae, have simple setae, three antennae, five maxillae, and three maxillary carriers.

Fauchald (1970:118) states that iphitimids have only simple falcate unhooded setae. However, this should be expanded to simple and composite unhooded setae. In addition, the two peristomial segments noted by Fauchald (1970:118) as diagnostic of the family Iphitimidae should be broadened to one or two peristomial segments. This change in the familial definition is made to encompass the new species, which has only one peristomial segment. All species of *Iphitime* are found in the branchial cavities of decapod crustaceans (Fauchald, 1970). Hartman (1952) suggested that

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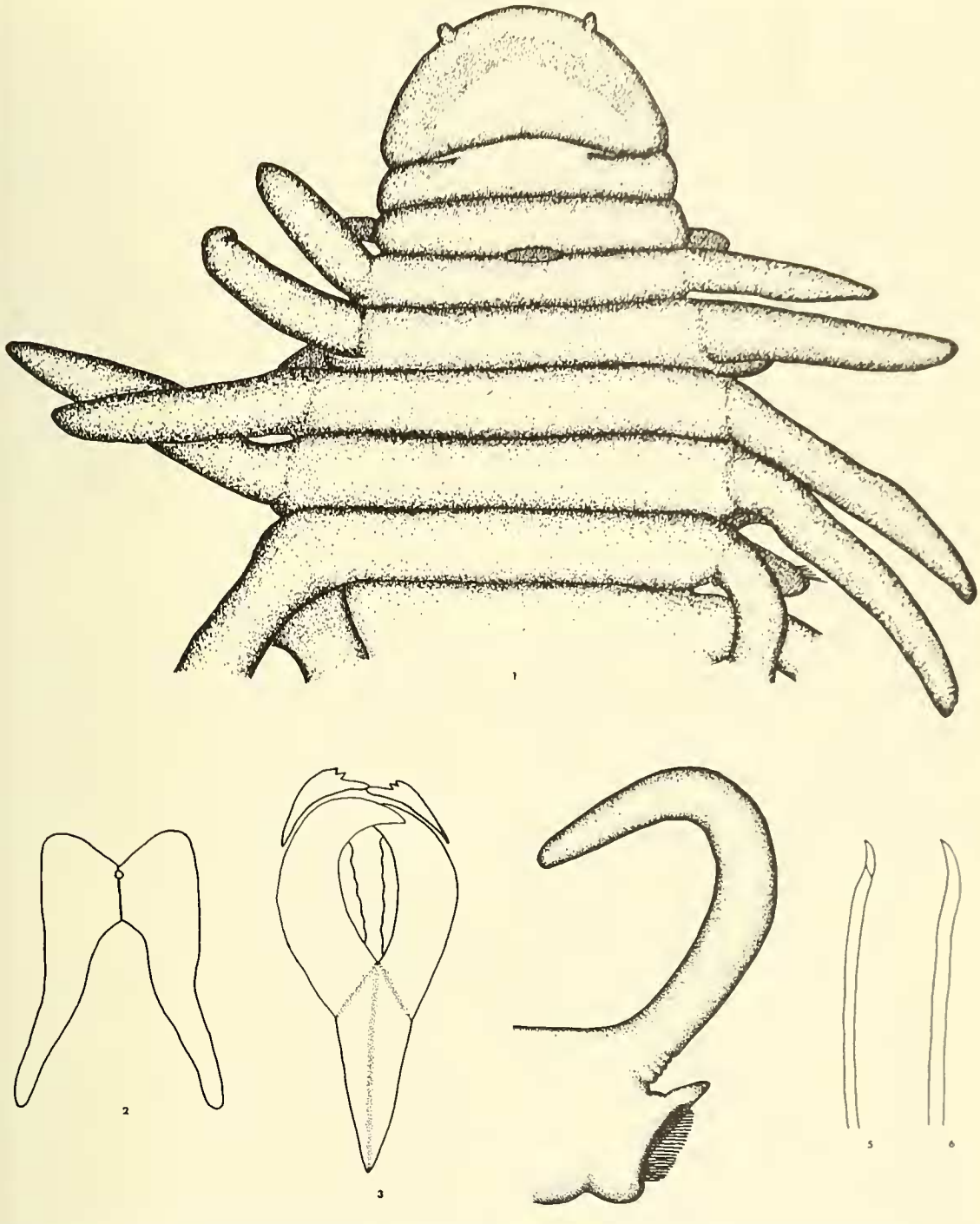

Figures 1-6. Fig. 1, Dorsal view of anterior end, X48; Fig. 2, Mandibles, removed from maxillary apparatus, ventral view, X110; Fig. 3, Maxillary apparatus, mandibles removed, ventral view, X110; Fig. 4, Median parapodium, anterior view, X21; Fig. 5, Composite falcate setae, X245; Fig. 6, Simple falcate setae, X245.

they may feed on small particles of food swept into the branchial cavity by respiratory currents. However, it should be noted that all species of *Iphitime* have well-developed jaws for biting and chewing which suggests that they may parasitize the branchial tissue of the host.

Iphitime holobranchiata, new species
Figures 1-6

Material: The specimens were taken from a large male *Cancer antennarius* (Stimpson, 1856) caught near Little Harbor, Santa Catalina Island, California. The holotype, measuring 48 mm, and one paratype (broken in two), 25 mm, are both deposited in the Allan Hancock Foundation. A number of individuals from an unknown locality measured from a few millimeters to 120 mm; all were found in the branchial cavity of the host crab.

Description: The 2 specimens measured 25 mm and 48 mm. Each had 175-200 setigerous segments. The color in life is pink-orange.

The prostomium (Fig. 1) is a rounded lobe with 2 small antennae. These extend beyond the outline of the anterior margin of the prostomium when viewed from above. A shallow depression curves around the anterior and anterolateral portions of the prostomium.

There is 1 peristomial segment. Between the prostomium and the peristomium is a narrow slit-like nuchal organ (Fig. 1).

The mandibles (Fig. 2) are fused medially in their anterior portion for about one-sixth of their entire length. A conspicuous hole is located in the anterior portion of this suture. The maxillary carriers (Fig. 3) are fused medially with their free edges extending dorsally to form a V-shaped structure. At their anterior margins they are fused with the large falcate maxillae I. Dorsal to this are the wavy-edged maxillae II. Distinct teeth are absent. Each maxillae III has 1 large and 2 smaller teeth.

The long branchiae are dorsolateral. Branchiae are first present from the second setigerous segment. Each is long and digitiform (Figs. 1, 4).

Parapodia (Fig. 4) consist of a small ventrolateral presetal lobe and a large dorsolaterally directed postsetal lobe. There are 5-7 composite falcate setae (Fig. 5) and about 29 simple falcate setae (Fig. 6) in each parapodium. All lack hoods. Eight acicula are present.

Discussion: In contrast to other species of *Iphitime*, *I. holobranchiata* has only 1 peristomial segment. All other species have 2. *Iphitime döderleinii*, *I. cuenoti*, and *I. paguri* all have more composite falcate setae than simple ones. The opposite situation exists in *I. holobranchiata* which has many more simple than composite falcigers.

Iphitime paguri and *I. holobranchiata* are the only 2 species in the genus with simple unbranched branchiae. In *I. holobranchiata* they are inserted dorsolaterally while in *I. paguri* they are dorsal. The specific name *holobranchiata* was chosen because it connotes simple, whole, unbranched branchiae.

All species have 3 maxillae except for *I. loxorhynchi* which has only 2. Maxillary formulas for all species are given in Table 1, which is expanded from Hartman (1952) by adding *I. holobranchiata* and diagnostic characters not contained in her table.

Distribution: Cancer antennarius ranges from British Columbia to Magdalena Bay, Baja California. Examination of the branchial cavities of live *C. antennarius* from southern California showed the infection frequency to be quite high. From the 30 individuals inspected 142 *I. holo-*

TABLE 1. Diagnostic characters of species in the genus *Iphitime*.

Name of Species	*Total Length in mm*	*Host Species and Locality*	*Number of Setigerous Segments*	*Number of Peristomial Segments*	*First Presence of Branchiae and Character*	*Parapodial Components*	*Number of Maxillae*	*Maxillory Formulae*
I. cuenoti Fauvel	7-12	*Maia squinado* *Portunus* spp. *Gonoplax angulata* *Macropodia longirostris* All from Europe	20-60	2	First; simple to divided, lateral	4-5 simple falcigers 20 composite falcigers	3	1+1−1+1−1+1
I. döderleinii Marenzeller	61	*Macrocheira kaempferi* Japan	185-210	2	First; simple and palmate, midlateral	14-15 simple falcigers Many composite falcigers About 4 acicula	3	1+1−1+1−1+1
I. holobranchiata, new species	25,48[1]	*Cancer antennarius* Southern California	175-200	1	Second, simple	29 simple falcigers 5-7 composite falcigers 8 acicula	3	1+1−0+0−3+3
I. loxorhynchi Hartman	60-70	*Loxorhynchus grandis* Southern California	200 or more	2	Second; simple to divided, lateral	26 simple falcigers 20 composite falcigers 6 acicula	2	1+1−0+4 (5)
I. paguri Fage & Legendre	7	*Gonoplax angulata* *Macropodia longirostris* *Portunus depurator* *Eupagurus bernhardus* All from Europe	86-90	2	Fourth; simple dorsal	1 simple falciger 7-8 composite falcigers	3	1+1−1+1−1+1

[1]Measurements of holotype and paratype only.

branchiata were taken. The maximum number found in any one crab was 39.

Ecology: Small specimens commonly occupied the interlamellar areas of the phyllobranchs while larger ones were found on the walls of the cavity or on the surface of the branchiae. No visible damage to the gills was observed.

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TWO TYPES OF AGGREGATION GROUPING IN THE LARGE MILKWEED BUG, *ONCOPELTUS FASCIATUS* (HEMIPTERA: LYGAEIDAE)

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ABSTRACT: Two types of grouping behavior, parallel and linear groups, in the large milkweed bug *Oncopeltus fasciatus* (Dallas) seem to have survival value. Grouped bugs receive mutual benefit from the ability to perceive stimuli from more directions and are usually touching each other. Color pattern and uniformity of direction causes a striking pattern in aposomatic insects. A combination of the shape of the bugs, limited areas for grouping on the plant, and microclimates have influences on the type and shape of aggregations. Aggregation may also be influenced by the substrate, position of the heat or light source, and changing behavioral and physiological stages of the bug.

The milkweed bug, *Oncopeltus fasciatus* (Dallas), has a gregarious behavior that has been documented by Weiss and Dickerson (1921), Andre (1934), Beck, Edwards and Medler (1958), and Barrett and Chiang (1967a). Gregarious behavior in milkweed bugs is herein defined as the condition which exists when one bug is within one body length of another bug. When two bugs are of different sizes, the length of the larger bug is used as the measure between bugs.

Aggregation or grouping is a normal occurrence in the bugs and they spend the majority of their lives in close proximity to one another. A "normal" aggregation consists of grouped bugs seemingly oriented in almost every direction. The bugs may be in compact groups where there is much contact between bugs or in loose groups where there is little contact.

OBSERVATIONS

Time-lapse pictures were taken of milkweed bugs grouped inside plastic containers. In the process of taking these pictures two grouping behavior patterns were observed (on the bottom of the container) which were different from normal aggregation. These two groupings have been observed on other substrates with varying conditions and are herein labeled "linear groups" and "parallel groups."

In a linear group the bugs will line up in com-

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